


Warmup!

Roberto is delivering 5-gallon buckets of paint to a painting contractor. Each 5-gallon bucket weighs 55 pounds and Roberto weighs 188 pounds. If the maximum capacity of the tailgate lift on the truck is 1700 pounds, how many buckets of paint can Roberto take on each trip on the lift if he rides as well?

$$\begin{aligned} 188 + 55p &\leq 1700 \\ 55p &\leq 1512 \\ p &\leq 27.49 \end{aligned}$$



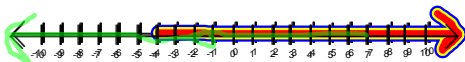
1-6 Solving Compound and Absolute Value Inequalities

AND conjunction intersection 

OR disjunction union 

Do not write!

$$-4 \leq x \leq 7$$



Do not write!

$$x \leq -3 \text{ OR } x \geq 6$$



ex:

$$-9 < 3(x-2) \leq 6$$

$$-9 < 3(x-2) \text{ AND } 3(x-2) \leq 6$$

$$-3 < x-2$$

$$x-2 \leq 2$$

$$-1 < x$$

$$x \leq 4$$



$$(-1, 4]$$

$$\{x | -1 < x \leq 4\}$$

$$\frac{y}{3} - 7 < -9 \text{ or } \frac{y+6}{2} > 5$$

$$\frac{y}{3} < -2$$

$$y+6 > 10$$

$$y < -6$$

OR

$$y > 4$$



$$(-\infty, -6) \cup (4, +\infty)$$

$$\{y | y < -6\} \cup \{y | y > 4\}$$

$$y > -6 \text{ or } y < 4$$



$$(-\infty, +\infty)$$

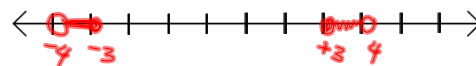
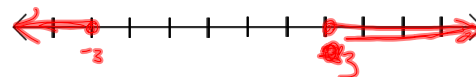
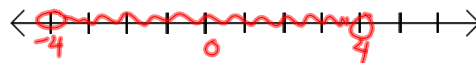
$$y < -6 \text{ AND } y > 4$$

$$\emptyset$$

FUN!

ex:

$$-7 < 2x + 1 < 9 \text{ And } [x - 1 \geq 2 \text{ Or } 2 - x \geq 5]$$



$$(-4, -3] \cup [3, 4)$$

Absolute Value and Order

Less Than **AND**Greater **OR** than

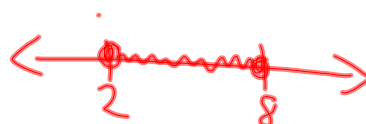
ex:

$$|x - 5| \leq 3$$

Flip symbol
+ sign

$$x - 5 \leq 3 \text{ AND } x - 5 \geq -3$$

$$x \leq 8 \text{ AND } x \geq 2$$



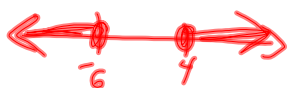
ex:

$$\underline{-3|a + 1| < -15}$$

$$|a + 1| \geq 5$$

$$a + 1 \geq 5 \text{ OR } a + 1 \leq -5$$

$$a \geq 4 \text{ OR } a \leq -6$$



ex:

$$|2x| < -6$$

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$$2x < -6 \text{ AND } 2x > 6$$

$$x < -3 \text{ AND } x > 3$$




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ex $5 < |2x + 3| < 23$

$5 < |2x + 3|$ AND $|2x + 3| < 23$

$|2x + 3| > 5$ AND $|2x + 3| < 23$

$2x + 3 > 5$ OR $2x + 3 < -5$ $2x + 3 < 23$ AND $2x + 3 > -23$
 $2x > 2$ $2x < -8$ $2x < 20$ $2x > -26$
 $x > 1$ OR $x < -4$ $x < 10$ $x > -13$

Do:

1. $|1.5x + 6| \geq 3$

2. $|2x + 1| \leq 5$

3. $-7 < 2x - 3 < -1$ OR $-1 < 3x + 2 < 14$

HW p44 #s 27-43odd and 44